

REMARKS

Claims 1-8 are pending. Claims 1 and 6 have been amended to include the subject matter of cancelled claims 9 and 10. No new matter has been added.

The Office Action rejects claims 1 and 6 under 35 U.S.C. 102(b) as being anticipated by Rittenbach (U.S. Patent No. 4,378,559). Applicants respectfully assert that Rittenbach fails to disclose or suggest the features of claims 1 and 6 which include the non-reciprocal phase shifter being a three-port circulator. The Office Action concedes that Rittenbach does not show this feature.

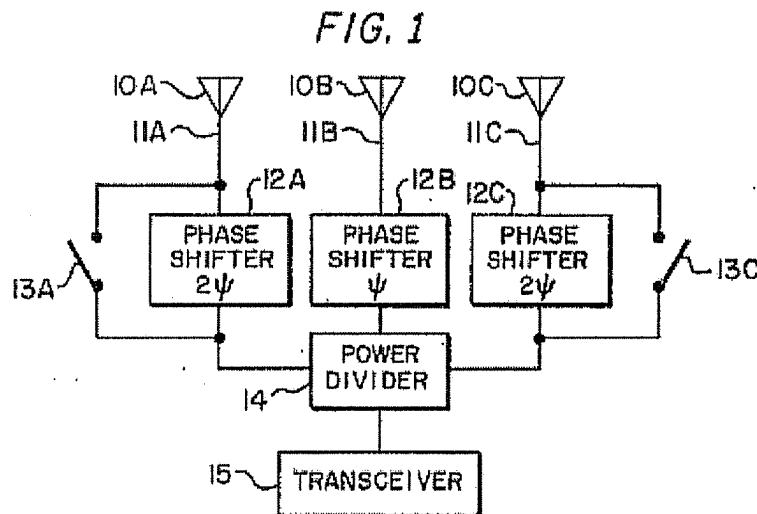
The Office Action rejects claims 2, 3, 7 and 8 under 35 U.S.C. 103 as being obvious over Rittenbach in view of Coe (U.S. Patent No. 4,812,855). Applicants respectfully assert that the combination of Rittenbach and Coe fails to disclose or suggest the features of claims 2, 3, 7 and 8 which include the non-reciprocal phase shifter being a three-port circulator. Coe is directed to a dipole antenna and does not describe any phase shifters.

The Office Action rejects claims 4 and 5 under 35 U.S.C. 103 as being obvious over Rittenbach. As described above, Rittenbach does not disclose or suggest the feature of claims 4 and 5 of the non-reciprocal phase shifter being a three-port circulator.

The Office Action rejects claims 9 and 10 under 35 U.S.C. 103 as being obvious over Rittenbach in view of Leipala (U.S. Patent No. 2002-0086643). This rejection is moot as to claims 9 and 10 which have been cancelled. However, claims 1 and 6 as amended include the subject matter of claims 9 and 10 of the non-reciprocal phase shifter being a three-port circulator and will be addressed accordingly. Applicants

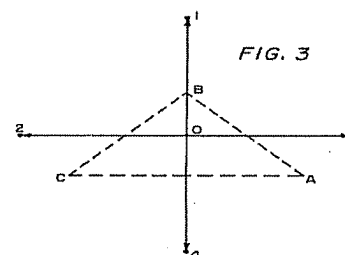
respectfully assert that there is no motivation to modify the shunting arrangement of Rittenbach with the circulator of Leipala.

Rittenbach is directed to a radar system that allows for three-dimensional beam switching in at least four different directions in space to overcome the shortcomings of its earlier, less flexible version of a radar system which could only be switched between two coplanar positions. To provide for the switching, Rittenbach employs a shunting system as shown in FIG. 1:

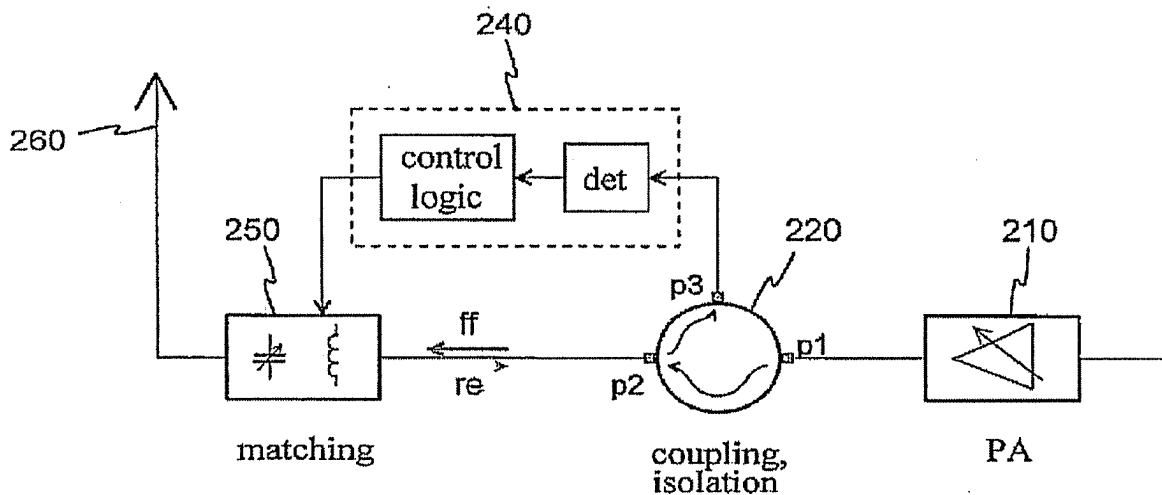


The flexibility introduced through use of the switches 13A and 13C allows for various beam projections as shown in table I and FIG. 3 of Rittenbach:

TABLE I					
Switch Position		Phase Shift Introduced			Beam
13A	13C	Ant 10A	Ant 10B	Ant 10C	Projection
Closed	Closed	0	φ	0	01
Closed	open	0	φ	2φ	02
Open	closed	2φ	φ	0	03
Open	Open	2φ	φ	2φ	04



In contrast, Leipala is an antenna matching circuit as shown below:



The Leipala circulator 220 is rigid in its operation:

The shape of the waveguide and the piece of ferrite inside it give the variable fields propagating in the waveguide phase shifts such that a field fed into a given port can only leave through a certain other port but not through the rest of the ports. This is realized in a circulatory manner: For example, the circulator in FIG. 2 has three ports. A field fed into a first port p1 can go out only through a second port p2, a field fed into the second port can only go out through a third port p3, and a field fed into the third port can only go out through the first port. In practice there is naturally a small leakage in the prohibited direction, but the attenuation in that direction is, however, several tens of decibels. (Leipala par. 0016).

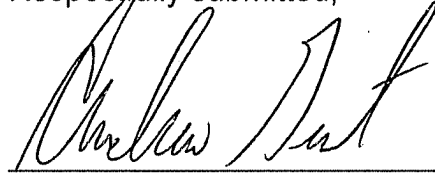
Replacing the arrangement in Rittenbach with the circulators in Leipala would obviate the objective of Rittenbach to provide various beam projections through a shunting operation.

Accordingly, for at least the above-described reasons, withdrawal of the rejections is respectfully requested. Favorable consideration and early issuance of the Notice of Allowance are respectfully requested.

Dated: _____

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Respectfully submitted,



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